Claims 12 and 18 were rejected under 35 U.S.C. §102(b) in view of U.S. Patent No. 5,973,785 (Okamoto). It is the Examiner's position on page 3 of the Office Action dated July 31, 2002 that in Okamoto "the spots overlap one another on the surface of the sample as well as at a position or site ahead of the surface sample". Applicant has amended Claim 12 to describe the spots as being capable of overlapping behind the section. Clearly, Okamoto being limited to overlapping spots on the surface or ahead of a surface, as the Examiner states, the spots in Okamoto are not capable of overlapping behind such surface. Claim 18 has been amended similarly to Claim 12. Accordingly, Claims 12 and 18 are not anticipated by Okamoto, and Applicant requests that the rejection of Claims 12 and 18 be withdrawn.

Claim 13 was rejected under 35 U.S.C. §103(a) as being unpatentable over Okamoto in view of Official Notice. Claim 13 depends on Claim 12 which for reasons argued above is not described or suggested by Okamoto. Thus, Applicant requests that the rejection of Claim 13 also be withdrawn.

Claims 14-17 were rejected under 35 U.S.C. §103(a) as being unpatentable in view of Okamoto and U.S. Patent No. 5,760,901 (Hill). Claim 14, as amended, describes the transverse, opposing phase, multi-mode light as being capable of overlapping behind the image plane. Okamoto does not, and moreover, is not even capable of, overlapping its spots behind the surface being imaged, as the image plane in Okamoto is limited to its surface. Therefore, withdrawal of the rejection of Claim 14 and of its dependent Claims 15-17 is requested.

New Claim 19 has been added and is believed patentable over Okamoto and Hill.

Substitute formal drawing sheets for FIGS. 2, and 2A-2C are enclosed to remove reference numerals 46 and 56 in FIG. 2, and to correct an error in notations for FIGS. 2A and 2C where their FIG. number and TEM notations were inadvertently switched, and now correspond to page 4 of the amended specification. FIG. 2B is unchanged. Marked-up FIGS. 2, 2A and 2C showing changes in red ink are enclosed.

A petition for a three-month extension of time is enclosed with a check for $507.00 for the petition fee and fee for the additional independent claim.

Respectfully submitted,

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Kenneth J. LuKacher

Attorney for Applicant
Registration No. 38,539

South Winton Court
3136 Winton Road South, Suite 204
Rochester, New York 14623
Telephone: (585) 424-2670
Facsimile: (585) 424-6196

Enclosures: Combined Amendment and Petition for Extension of Time with check for $507.00;
Two Substitute Formal Drawings for FIGS. 2 and 2A-2C;
Marked-up FIGS. 2 and 2A-2C;
Appendix showing marked-up version of amended specification and claims; and
Certificate of Express Mail, Express Mail No. EV 104334713 US.

APPENDIX

Marked-up version of amended specification and claims.

In the Specification:

On page 4, replace paragraph at lines 15-17 of substitute specification as follows:

FIGS. 2A, 2B and 2C are plots of the amplitude of the multi-mode laser beam at the beam waist in the focal plane shown in FIG. 2, for $TEM_{[01]03}$, TEM_{02} and $TEM_{[03]01}$, illumination respectively;

On page 6, replace paragraph at lines 11-16 of substitute specification as follows:

The light is returned and collected by the objective 30 and combined. The light focused into sample 12 and returned from sample 12 share substantially objective 30 as illustrated in FIG. 2. The intensity of light returned from the spots C and D depends upon the optical reflectance averaged across the spots C and D. The intensity is the sum of the squares of amplitude of the light returned from each spot C and D. Accordingly, the amount of light from the image plane which is focused by the condenser 34 and passes through the confocal aperture as the optical signal which is detected by the detector 24, depends upon the effect of the material specimen in the focal plane.

On page 7, replace paragraph at lines 3-11 as follows:

Light scattered from the two spots 220 and 221 inside, or on, the object 215 is collected by lens 210 and angularly combined in the objective 210 and directed towards the beam splitter 240. A portion of the reference and sample light is directed to a photodetector and signal conditioning circuit 245 which may be a silicon photodiode and amplifier. The portion of the light from both arms incident on the detector that is both parallel and coherent will interfere in a detection arm terminated at the detector 245 and produce a phase modulated electric signal which varies synchronously with the reference mirror position. The amplitude of the modulated signal is proportional to the reflectivity of the subject at the point inside the object that has equal optical path as the reference arm to within the coherence length of the source.

In the Claims:

Please rewrite Claims 12, 14 and 18 as follows:

12. (twice amended) A scanning [confocal] microscope which comprises a laser providing an incident beam, a beam splitter, a scanner for scanning an image plane in a specimen section in general orthogonal X-Y directions in said plane, said laser being a plural transverse mode laser providing an amplitude distribution having a plurality of lobes in opposing phase relationship to form spaced spots in a focal plane in said section and capable of overlapping spots [at one of] behind[, ahead, or behind and ahead, of] said section, and an objective for focusing said spots in said focal plane, [a confocal] an aperture, a photodetector behind said aperture, and optics for focusing return light from the spots deflected by said beam splitter at said aperture.

14. (twice amended) An optical coherence imaging system for imaging a specimen section, which comprises a source providing light having low temporal coherence propagating in transverse, opposing-phase, multi-mode, a beam splitter which directs the light from said source into a reference arm and a sample arm wherein the light is incident on an image plane in said transverse, opposing phase, multi-mode in which it propagates to said image plane in the specimen section and capable of spatially [overlaps at one of] overlapping behind[, ahead, or behind and ahead, of] the image plane, a scanner in said sample arm for scanning [each] said specimen in generally orthogonal directions, and also in said sample arm, an objective having an optical axis for focusing said low temporal coherence transverse, opposing phase, multi-mode light at a plurality of spots, a detection arm into which light is directed by said beam splitter from said reference and sample arms, and means for providing images in response to interference of light in said detection arm.

18. (amended) A system for imaging a section (or sections) of tissue comprising means for producing a beam having multiple, opposing-phase, transverse propagating modes, means for focusing said beam at a plurality of spots in said section of said tissue in accordance with said multiple, opposing phase, modes in which said modes [overlap at one of] are capable of overlapping behind[, ahead, or behind and ahead, of] the section, and collecting return light from said tissue, and means for detecting said return light combined from said plural spots to provide images representing said section of said tissue.